I claim:

1. A low-boron, high-barium concentration glass fiber composition comprising:

less than about 1 weight percent boron;

from about 5.5 to about 18 weight percent barium oxide;

from about 10 to about 14.5 weight percent alkali oxide;

from about 4 to about 8 weight percent alumina;

from about 1 to about 9 weight percent alkaline earth oxide, excluding barium oxide;

from about 2 to about 6 weight percent zinc oxide;

from about 0.1 to about 1.5 weight percent fluorine; and

a balance of the glass fiber composition being silica.

2. The glass fiber composition of claim 1, wherein the boron is present as B_2O_3, alkali oxide is present as Na_2O or K_2O, and alkaline earth oxide is present as CaO or MgO.

3. The glass fiber composition of claim 1, wherein the alkali oxide is present as Na_2O and K_2O and alkaline earth oxide is present as CaO and MgO.

4. The glass fiber composition of claim 1, further comprising less than about 0.2 weight percent of one or more compounds selected from the group consisting of MnO, SrO, Li_2O, TiO_2, ZrO_2 and Fe_2O_3.

5. A low-boron, high-barium filter comprising:

glass fibers comprising,

about 0 to 1 weight percent boric oxide;

from about 6 to about 16 weight percent barium oxide;

from about 10 to about 14.5 percent R_2O, wherein R_2O is a mixture of sodium oxide and potassium oxide;

from about 4 to 8 weight percent alumina;

from about 1 to about 9 weight percent calcium oxide and magnesium oxide;

from about 2 to about 6 weight percent zinc oxide;

from about 0.5 to about 1.5 weight percent fluorine;

a balance of the glass fibers being silica; and

wherein the glass fibers have an average diameter of from about 0.1 μm to about 8.15 μm.

6. The filter of claim 5, wherein the average diameter of the glass fibers is from about 0.1 μm to about 3.0 μm.

7. Low-boron, high-barium fine-diameter glass fibers comprising:

less than about 1 weight percent of B_2O_3;

from about 5.5 to about 18 weight percent BaO;

from about 10 to about 14.5 weight percent of Na_2O and K_2O;

from about 4 to about 8 weight percent of Al_2O_3;

from about 1 to about 9 weight percent CaO and MgO;

from about 2 to about 6 weight percent ZnO;

from about 0.1 to about 1.5 weight percent F_2;

less than about 0.2 weight percent of MnO, SrO, Li_2O, TiO_2, ZrO_2 and Fe_2O_3; and

a balance of SiO_2.

8. The glass fibers of claim 7, wherein the glass fibers have an average diameter of from about 0.1 μm to about 3.0 μm.

9. A low-boron, high-barium glass fiber composition comprising:

less than about 1 weight percent of boric oxide;

from about 6 to about 16 weight percent barium oxide;

from about 10 to about 12.5 weight percent of alkali oxide;

from about 5 to about 6 weight percent of alumina oxide;

from about 1 to about 9 weight percent alkaline earth oxide;
from about 2 to about 5 weight percent zinc oxide;
from about 0.1 to about 1.0 weight percent fluorine; and
a balance of the composition being silica.

10. The glass fiber composition of claim 9, wherein the glass fiber composition forms glass fibers having an average diameter of from about 0.1 μm to about 3.0 μm.

11. The glass fiber composition of claim 9, wherein boron is present as B_2O_3, alkali oxide is present as Na_2O and K_2O, and alkaline earth oxide is present as CaO and MgO.

12. The glass fiber composition of claim 9, further comprising less than about 0.2 weight percent of one or more compounds selected from the group consisting of MnO, SrO, Li_2O, TiO_2, ZrO_2, and Fe_2O_3.

13. A low-boron, high-barium glass fiber composition comprising:
less than about 1 weight percent of boron;
from about 6 to about 16 weight percent barium oxide;
from about 10 to about 12.5 weight percent of alkali oxide;
from about 5 to about 6 weight percent of alumina oxide;
from about 1 to about 9 weight percent alkaline earth oxide;
from about 2 to about 5 weight percent zinc oxide;
from about 0.1 to about 1.0 weight percent fluorine;
a balance of the composition being silica; and
wherein the glass fiber composition forms glass fibers having an average diameter of from about 0.1 μm to about 8.15 μm.

14. The glass fiber composition of claim 13, wherein the glass fibers have an average diameter of from about 0.1 μm to about 3.0 μm.

~~15. A low-boron, high-barium HEPA or ULPA filter comprising:~~

glass fibers comprising,

less than about 1 weight percent of B_2O_3;

from about 6 to about 16 weight percent BaO;

from about 10 to about 12.5 weight percent of Na_2O and K_2O;

from about 5 to about 6 weight percent of Al_2O_3;

from about 1 to about 9 weight percent CaO and MgO;

from about 2 to about 5 weight percent ZnO;

from about 0.1 to about 1.0 weight percent F_2;

less than about 0.2 weight percent of MnO, SrO, Li_2O, TiO_2, ZrO_2, and Fe_2O_3;

a balance of the filter being SiO_2; and

wherein the glass fibers have an average diameter of from about 0.1 μm to about 8.15 μm.

16. The filter of claim 15, wherein the glass fibers have an average diameter of from about 0.1 μm to about 3.0 μm.

17. A method of making glass fibers for use in forming HEPA or ULPA glass filters having a low-boron concentration comprising:

fiberizing a molten glass composition, wherein the glass composition comprises less than about 1 weight percent of boron, from about 5.5 to about 18 weight percent barium oxide, from about 10 to about 14.5 weight percent of alkali oxide, from about 4 to about 8 weight percent of alumina, from about 1 to about 9 weight percent alkaline earth oxide, from about 2 to about 6 weight percent zinc oxide, from about 0.1 to about 1.5 weight percent fluorine, and a balance of the composition being silica;

spinning the molten glass composition to produce glass fibers; and

attenuating the glass fibers.

18. The method of claim 17, wherein the glass composition has boron present as B_2O_3, alkali oxide present as Na_2O and K_2O, and alkaline earth oxide present as CaO and MgO.

19. The method of claim 17, wherein the glass fibers are spun to have an average diameter of from about 0.1 μm to about 3.0 μm.